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### INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for April, 1887, and is based upon reports of regular and voluntary observers of both countries. Descriptions of the storms which occurred over the north Atlantic Ocean during the month are also given, and their approximate paths shown on chart i, on which also appears the distribution of icebergs and field ice reported. In tracing the centres of the paths of these storms, data from the reports of two hundred and ten vessels have been used. Unusually severe weather prevailed in the trans-Atlantic routes and west of the fortieth meridian during the first and second decades of the month. Dense fog prevailed during a considerable portion of the month along the southern edge of the ice region.

On chart i for this month are traced over the United States and Canada the paths of thirteen areas of low pressure; the average number for April during the past fourteen years is 10.3. The depression of the 22-23d in its progress from the Indian Territory to northern Michigan was accompanied, especially in Kentucky, southern Indiana, and Ohio, by unusually severe thunder-storms and heavy rains, with tornadoes at widely separated points in various parts of the country; in the upper lake region heavy snow and high wind prevailed. The depression which was central in the Ohio Valley on the morning of the 18th was attended in that and surrounding districts by an unusually heavy snowfall for the season.

The mean pressure of the month is very nearly normal in all districts, except Michigan, Wisconsin, Minnesota, and Dakota, where departures as large as .10 below occur.

No considerable departure from the normal temperature

occurs in any district except the central Mississippi and lower Missouri valleys, where the month has been from 2°.0 to 5°.9 warmer than the average April. In the Lake region and along the Atlantic coast the temperature is slightly below normal, in the central and western districts generally slightly above.

In the southeastern quarter of the country very little rain has fallen, the region of greatest deficiency extending from central Texas eastward to the south Atlantic coast.

In the preparation of this REVIEW the following data, received up to May 20, 1887, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and thirty-three Signal Service stations and twenty-four Canadian stations, as telegraphed to this office; one hundred and sixty-four monthly journals; one hundred and sixty-five monthly means from Signal Service stations; twenty-four monthly means from Canadian stations; two hundred and eighty-four monthly registers from voluntary observers; fifty-five monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs furnished by the publishers of "The New York Maritime Register;" monthly weather reports from the local weather services of Alabama, Arkansas, Illinois, Indiana, Kansas, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New England, New Jersey, North Carolina, Ohio, South Carolina, and Tennessee; and of the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

### ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean pressure for April, 1887, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

The area of highest pressure covers the greater part of the north Pacific coast region and is bounded by the isobar of 30.05; within this line the mean pressure of the month varies from 30.07 at Olympia, Wash., to 30.10 at Roseburg, Oregon. From this isobar the pressure decreases in all directions, except to the westward, until in the central districts of the country the comparatively low pressure of 29.90 and less is reached. From the central districts eastward it increases, attaining in the south Atlantic and east Gulf states a mean of 30.05 or above. In Maine and the adjacent Canadian Provinces the pressure is comparatively low, ranging from 29.86 at Sydney, Cape Breton Island, to 29.94 at Portland, Me. In the plateau region and eastern slope of the Rocky Mountains the pressure is also low as compared with districts in the southeastern quarter of the country and on the Pacific slope.

The departures from the normal pressure are given in the table of miscellaneous meteorological data, and are also shown on chart iv by lines connecting stations of equal departure. In New England, the middle Atlantic states, and lower lake region the pressure of the month is about normal, small departures

both above and below occurring in these districts; from thence westward, north of the fortieth parallel, as far as the eastern boundary of Idaho and Utah it is below the normal; in the upper lake region, Minnesota, Wisconsin, and Dakota the deficiency is quite large, the mean pressure at a number of stations being .10 or more below the normal. In all parts of the country south of the fortieth parallel the pressure is generally slightly above the normal, but the excess is very small, except in southeastern Texas where departures as large as .07 and .09 occur. In California the pressure is about normal; on the north Pacific coast excesses varying from .04 in the northern part of Washington Territory to .08 in southern Oregon occur.

As compared with the pressure of the preceding month, March, 1887, a very large decrease occurs in all parts of the country, except New England, the Atlantic states, and Florida. In the Missouri and upper Mississippi valleys the pressure for April is .20 to .26 below that of March. Along the Atlantic coast the pressure is above that of the preceding month, .10 and over in New England and the Canadian Maritime Provinces, and .01 to .06 in the more southerly districts. In Florida, the east Gulf states, and the north Pacific coast the mean pressure of the two months is about the same.